New Intellectual Property Protection

Semiconductor Chip Protection Act of 1984 offers unique form of protection; provisions are discussed

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The Semiconductor Chip Protection Act of 1984, Title III of H.R. 6163, ("Act") was signed into law by President Reagan on November 8, 1984. The act represents the first new federal form of intellectual property protection in over 100 years. The act provides protection for "mask works" which are "fixed" in semiconductor chips, as well as the semiconductor chips in which they are embodied.

The Senate proposed to extend protection to the design of semiconductor chips under the copyright law. However, the House suggested a different approach—a new form of protection. The act adopts the House approach. Although the act employs many copyright principles, it is a unique form of protection which is substantially different from copyright.

INTERESTED PARTIES

The act affects not only the members of the semiconductor industry, but also any distributor or importer of products embodying semiconductor chips. The breadth of the act is due to the specific inclusion in the act of the right to control contributory infringement (See Article IV). The act equates the distribution or importation of products embodying semiconductor chips as the distribution or importation of the semiconductor chips themselves (See Article IV). Semiconductor chip designers, semiconductor foundries and equipment manufacturers need to study the act in depth because it establishes an entirely new regime of rights in their area of business. Distributors and importers of semiconductor chips and products embodying semiconductor chips must become familiar with certain portions of the act in order to protect themselves against potential liability under the act.

SCOPE OF PROTECTION OF MASK WORKS

The act protects "mask works" which are "fixed" in a "semiconductor chip product"—these three terms are defined in the act and their definition is critical to the scope of protection under the Act. A mask work is defined as:

> "a series of related images, however fixed or encoded, (A) having or representing the predetermined, three-dimensional pattern on metallic, insulating or semiconductor material present or removed from the layers of a semiconductor chip product; and (B) in which series the relation of the images to one another is that each image has the pattern of the surface of one form of the semiconductor chip product."

A "semiconductor chip product" is defined as:

> "the final or intermediate form of any product having (A) two or more layers of metallic, insulating, or semiconductor material, deposited or otherwise placed on, or etched away or otherwise removed from, the piece of semiconductor material in accordance with a predetermined pattern; (B) and intended to perform electronic circuitry functions."

This definition is quite broad and includes memory chips, such as RAMs and ROMs, and logic function chips such as microprocessors. (Throughout the rest of this article the term "semiconductor chip" will be used instead of the cumbersome "semiconductor chip product").

A mask work is "fixed" in a semiconductor chip when its "embodiment in the product is sufficiently permanent or stable to permit the mask work to be perceived or reproduced from the product for a period of more than transitory duration." Thus, the plans or schematics that might include potential mask works are not protected under the act until they have been incorporated into a semiconductor chip. The protection for a mask work under the act is further limited by certain eligibility criteria which are more fully described below.

The scope of the protection of chip design under the act is uncertain since the definition of a protected mask work is not limited solely to the images that form the final design of a semiconductor chip, but can also include intermediate forms of the semiconductor chip. In fact, the legislative history suggests that individual "cells" might be protectable as mask works. The suggestion contributes to the uncertainty since the definition of a "cell" varies widely: cells can range in size from a one-transistor component to a collection of functions comprising as much as 30% of a final design of a semiconductor chip. The definition of a mask work is important not only to determine the scope of the act's protection, but it is critical in defining the limits of the reverse engineering defense and the calculation of statutory damages (See Articles VI and XII).

EXCLUSIVE RIGHTS

The owner of a mask work has the exclusive rights to do and to authorize any of the following:

> "1. To reproduce the mask work by optical, electronic or any other means;
> 2. To import or distribute a semiconductor chip product in which the mask work is embodied; and
> 3. To induce or knowingly to cause another person to do and of the acts described in paragraphs 1 and 2."

The act further defines "distribute" as to selll or lease, bail or otherwise transfer, or to offer to sell, lease, bail or

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otherwise transfer, or to offer to sell, lease, bail or otherwise transfer. As previously mentioned, the act defines the distribution or importation of a product incorporating a semiconductor chip product as the distribution or importation of that semiconductor chip.

The exercise of any of these exclusive rights without the permission of the owner of the mask work is an infringement under the act.

CONDITIONS OF PROTECTION

Relation With the United States

To be eligible for protection under the act, the owner of a mask work must meet one of the following criteria on the date of its first commercial exploitation anywhere in the world, or on the date of its registration as mask work in the United States, whichever occurs first:

(a) The owner must be a national or domiciliary of the United States or a stateless person wherever that person may be domiciled.

(b) The mask work must be first commercially exploited in the United States; or

(c) The owner must be a foreign national protected under the act by a treaty, a presidential proclamation or an interim order by the Secretary of Commerce. (These latter three methods of qualification are described in greater detail in Article XIV.)

The definition of first commercial exploitation is important not only for eligibility, but also to determine the term of protection and certain other rights under the act. The act defines "to commercially exploit" a mask work as:

> "to distribute to the public for commercial purposes a semiconductor chip product embodying the mask work; except that such a term includes an offer to sell or transfer a semiconductor chip product only when the offer is in writing and occurs after the mask work is fixed in a semiconductor chip product."

Thus, such commercial exploitation occurs when the first written offer is made to sell or transfer a semiconductor chip in which the mask work is fixed.

Fixation

A mask work must be fixed in a semiconductor chip. A mask work is fixed when it is embodied in a semiconductor chip in a sufficiently stable or permanent form to permit the mask work to be perceived or reproduced from the product for a period of more than transitory duration. This concept is similar to fixation in copyright law.

Registration

Registration is not required as a pre-condition of protection. However, protection under the Act will *terminate* if the mask work is not registered within two years after the date on which it is first commercially exploited (See Article X).

LIMITS OF PROTECTION

Originality

A mask work must be "original" to qualify for protection under the act. The description of the standard of originality in the legislative history is inconsistent. The legislative history in several instances refers to the concept of originality under the copyright law. This standard is rather low, essentially requiring that the mask work not be copied from another mask work. Nonetheless the Senate memorandum, in discussing originality, suggests that in certain circumstances the case law relative to the patent law concept of "unobviousness" would provide guidance in defining originality. This patent law standard is considerably higher than that under the copyright law. This issue is one which will probably be resolved in the courts.

Nonstaple Designs

The act does not provide protection for mask works which consist of "designs that are staple, commonplace, or familiar in the semiconductor industry, or variations of such designs, combined in a way that considered as a whole [are] not original." This provision represents Congress's intention to prevent public domain material from being incorporated into a mask work and protected under the act. This limitation provides little guidance and will probably be the subject of considerable litigation.

Ideas

The act does not protect ideas, procedures, processes, systems, methods of operation, concepts, principles or discoveries. This provision is similar to the copyright concept of the idea-expression dichotomy in which an expression which is dictated by form is not protected. Thus, the smallest units of chip design would probably not be protected under the act to avoid granting a patent-like monopoly.

Date of Exploitation

The act applies *only* to mask works fixed in semiconductor chips that were first commercially exploited (See definition in Article V) after July 1, 1983.

OWNERSHIP

The owner of a mask work is the person who created the mask work or the party to whom all rights under the act are transferred (such transfer must be in writing and executed by the owner or his agent). The employer is the owner of a mask work that is created by an employee in the scope of his employment. The Copyright Office has indicated in its final regulations that it does not consider an exclusive licensee of a mask work to be an owner of that mask work. The act requires that, to become an owner of a mask work, all rights under the act must be transferred. The final regulations state that the statute is ambiguous on the issue of whether the transfer of only the United States rights satisfies this criteria—the Copyright Office will not deny registration for failure to satisfy the ownership criteria solely on the basis that only the rights to a mask work in the United States were transferred. This ambiguity will affect foreign owners of mask works who transfer their rights to United States subsidiaries.

DURATION

Protection under the act commences on the earlier of the date on which the mask work is registered under the act or the day on which the mask work is first commercially exploited anywhere in the world. The protection extends until December 31 of the tenth year following such date. For example, a mask work registered or first commercially exploited on April 1, 1985, would be protected until December 31, 1995. However, protection under the act *terminates* unless the mask work is registered within two years of the date of first commercial exploitation.

The act also extends protection to mask works first commercially exploited after July 1, 1983, but before the effective date of the act (November 8, 1984), so long as such mask works are registered prior to July 1, 1985. The mask work owner, however, may not sue for infringing activities which took place prior to November 8, 1984.

The act also provides for a "compulsory" license for a limited period for certain semiconductor chips which infringe mask works protected retroactively (or products incorporating such chips). To be eligible, the infringing chip must be manufactured prior to November 8, 1984. The right to import and to distribute such products continues for two years after registration fo the mask work, but the importer or distributor must first pay or offer to pay a "reasonable royalty" to the mask work owner.

LIMITATIONS ON EXCLUSIVE RIGHTS: FIRST SALE, REVERSE ENGINEERING AND INNOCENT INFRINGEMENT

First Sale

The exclusive rights to import and distribute a semiconductor chip under the act terminate upon the first sale of a semiconductor chip that is manufactured with the permission of the owner of the embodied mask work. The owner of a particular semiconductor chip made by the owner of the mask work may import, distribute or otherwise dispose of or use *(but not reproduce)* that particular semiconductor chip without further authorization of the owner of the mask work. This provision is modeled on the first sale doctrine under the copyright law.

Reverse Engineering

This section is one of the most important found in the act. The semiconductor industry was very concerned that the common practice of reverse engineering would be hampered by any statute attempting to protect rights in semiconductor chips. Congress met this concern by providing a limited exemption from infringement of the exclusive rights of the mask work owner for:

> "(1) a person to reproduce the mask work solely for the purpose of teaching, analyzing, or evaluating the concepts or techniques involved or embodied in the mask work or the circuitry, logic flow, organization of components used in the mask work; or (2) a person who performs analysis or evaluation described in Paragraph 1 to incorporate the results of such conduct in an original mask work which is made to be distributed."

This provision permits the reproduction of the mask work for the study and evaluation of the design *and* the use of the results of such study to design, manufacture and sell semiconductor chips so long as such chips embody an "original" mask work.

The exact scope of the reverse engineering right is unclear. The legislative history sets forth two conflicting standards to judge whether reverse engineering is proper or "an infringement." On the one hand, the legislative history refers approvingly to mask works that are the product of "substantial study and analysis, and not the mere result of plagiarism accomplished without such study or analysis" and at another place, to chips whose design embodies "significant toil and investment so that it is not a mere plagarism ... even if the layout of the two chips is, in substantial part, similar." However, the legislative history also states that the act incorporates the copyright principle of "substantial similarity." Substantial similarity, however, is not based on effort, but upon the degree of similarity.

This ambiguity in standards and the importance of this exception strongly suggest that the reverse engineering provision will be the subject of extensive litigation. In this area, advice of counsel will be particularly important.

Innocent Infringers

The act also limits the remedies of mask work owners with respect to "innocent purchasers." An innocent purchaser is one who purchases an infringing semiconductor chip product in good faith without notice that it is protected. The innocent purchaser defense is available *solely* for infringement of the rights to import or distribute, *not* of the right to reproduce.

An innocent purchaser incurs no liability under the act for importation or distribution of infringing semiconductor chips (or products incorporating such chips) *prior to notice* of their protection under the act. The innocent purchaser may continue to distribute and import infringing semiconductor chips (or products incorporating such chips) which he purchased *prior* to notice and his liability to the mask work owner as to such chips will be limited to "reasonable royalty." However, this defense *does not* extend to the importation or distribution of semiconductor chips purchased *after* the importer or distributor has received notice. He will be fully liable under the act for any such distribution or importation.

REGISTRATION

Mask works are registered with the Copyright Office. The Copyright Office accepted the first deposits under the act on January 7, 1985. The owner of the mask work is the only person who may register a mask work. Registration may be accomplished either before or after commercial exploitation, but, unlike the copyright law, *protection under the act will terminate unless a mask work is registered within two years of the first date of commercial exploitation.* The Copyright Office published interim regulations on January 3, 1985, and published the final regulations governing such registrations on June 28, 1985. Registration is accomplished by filing Form MW, the appropriate fee (at present $20) and the appropriate deposit.

The mask owner must register his work prior to suing for infringement and the registration acts as *prima facie* evidence of protection under the act.

The act provides for the registration of mask works in the form of "pending applications" by foreign nationals whose mask works would not otherwise qualify for protection under the act. This regulation provides for foreign nationals to submit "preliminary applications" that would be held until the issuance of an order granting protection to such nationals under the act by the Secretary of Commerce or his designee. (The Secretary of Commerce has delegated this authority to the Assistant Secretary of Commerce and Commissioner of Patents and Trademarks.) Such registrations would become effective on the date on which such an order is issued. As of July 1, 1985, several such orders had been granted (see Article XIV).

MASK WORK NOTICE

The owner of a mask work may affix notice to the mask work, masks and other semiconductor chips embodying the mask work. Unlike the copyright law, this notice is not required as a condition of protection. The notice must be attached in such manner and location as to give reasonable notice of such protection. The Copyright Office has provided several examples in the regulations of acceptable placement of notice.

Unlike the copyright law, notice is *not* a condition of protection under the act. However, it does provide notice of protection to potential infringers.

REMEDIES

The act provides that either an owner or an exclusive licensee of all rights under the act may sue an infringer. The remedies are very similar to those found under the copyright law. Prior to the filing of any such suit, the mask work must be registered with the Copyright Office.

The act provides both injunctive and monetary relief for infringement of any of the exclusive rights under the act. The monetary relief may take several forms: (1) actual damages, as well as the infringer's profits (to the extent they are attributable to the infringement and are not taken into account in computing the award of actual damages), or (2) statutory damages of up to $250,000 for the infringement of each mask work.

During the term of an infringement suit, the court may order the impounding of the semiconductor chips and any drawings, tapes, or masks or other products by means of which such semiconductor chips may be reproduced and that are claimed to be involved in the violation of the exclusive rights under the act. As part of the final judgment, the court may order the destruction or other disposition of any of the infringing semiconductor chips and any masks, tapes or other articles by means of which such products may be reproduced. The court may also award costs and attorneys' fees to the prevailing party.

The owner (or exclusive licensee) may also seek to prevent the importation of an infringing semiconductor chip (or products incorporating such a chip) through exclusion proceedings used by the U.S. Customs Service and the U.S. Postal Service. Products imported in violation of the act are subject to seizure and forfeiture in the same manner as other property imported in violation of the customs laws. In general, such forfeited products will be destroyed unless it can be shown to the satisfaction of the Secretary of the Treasury that the importer had no reasonable grounds for belief that his or her act constituted a violation of the act.

RELATIONSHIP TO OTHER LAWS

The act does not supersede protection by patent or copyright. Thus, software, even when embedded in a semiconductor chip such as a ROM, is not protected by the act. Consequently, a semiconductor chip that includes software as a ROM could be partially protected by copyright and partially protected by mask work rights. The act *does not* affect any rights to mask works first commercially exploited prior to July 1, 1983.

The act provides an exclusive federal remedy for unauthorized reproduction, distribution and importation of mask works. The law preempts any state laws to the extent such laws provide rights and remedies equivalent to the rights and remedies under the act. The act does not pre-empt trade secret protection law so long as the mask work meets the other criteria of protection under trade secret law.

The act does not provide any criminal penalties for violation of its provisions.

PROTECTION OF MASK WORKS CREATED BY FOREIGN NATIONALS

Since the United States was the first country to enact legislation protecting mask works, it has incorporated extensive transition provisions in the act to encourage reciprocal protection by other countries. Congress intended that the act would serve as an impetus for other countries to provide similar protection.

The owner of a mask work who is not a United States national or domiciliary at the earlier of (1) the date of first commercial exploitation or (2) date of registration under the act may obtain protection under the act for his mask works by transferring to a United States national or domiciliary (such as its United States subsidiary) all rights in such mask works which are equivalent to those under the act. The act, itself, is unclear whether a transfer of such rights limited to the United States will make such transferee an "owner" under the act. The Copyright Office has not taken a position on this issue and will register a mask work even if the transfer includes only United States rights. Another consideration for a foreign national in employing this alternative is that the transfer of such rights could subject the mask works and any transferred technology to U.S. export controls.

The foreign owner of a mask work can also qualify for protection under the act by ensuring that the first commercial exploitation of the mask work occurs in the United States. This alternative would require that the first *written* offer to sell or transfer a semiconductor chip embodying the mask work be made in the United States.

The act also has detailed provisions for coordinating protection with other countries who enact similar legislation. Protection may be secured on an interim basis through an order issued by the Assistant Secretary of Commerce (Commissioner of Patents and Trademarks) or on a more permanent basis by treaty or a Presidential proclamation. Congress wanted to avoid an "open season" by U.S. chip designers and manufacturers on foreign chip designs. The Secretary of Commerce (who has delegated this authority to the Assistant Secretary) may extend protection under the Act to nationals, domiciliaries and sovereign authorities of a foreign nation, if he finds:

> (1) that the foreign nation is making good faith efforts and reasonable progress toward either (a) entering into a treaty for the protection of mask works to which the United States is also a party or (b) enacting legislation which extends to mask work owners who are nationals or domiciliaries of the United States protection on the same basis as the Act and on substantially the same basis tially the same basis on which the foreign nation will extend such protection for mask works to its own nationals and domiciliaries for mask works first commercially exploited in that nation;
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> (2) that the nationals, domiciliaries and sovereign

authorities in the foreign nation are not engaged in misappropriation or unauthorized distribution or commercial exploitation of mask works; and

(3) that the order would promote international comity and the protection of mask works.

Upon the issuance of such an order, permanent registration for mask works in the United States may no longer be denied solely on the basis that the owner of the mask work is a national, domiciliary or sovereign authority of a foreign country or because a mask work was first commercially exploited in that foreign country. This authority of the Secretary of Commerce will terminate three years after the effective date of the act.

Mask works may also be protected if a foreign nation is party to a treaty for protection of mask works to which the United States is a party.

Finally, the President may issue a proclamation extending protection under the act if he finds that the foreign national has enacted legislation which provides equivalent protection in that nation for the mask works whose owners are United States nationals or domiciliaries.

Prior to July 1, 1985, the Commissioner of Patents and Trademarks had granted interim protection to six countries for varying periods: Japan (November 8, 1984, to June 6, 1986); Sweden (April 25, 1985, to June 13, 1986); United Kingdom (March 1, 1985, to November 8, 1987); Canada (June 13, 1985, to June 21, 1986); the Netherlands (June 3, 1985, to June 21, 1986); and Australia (May 23, 1985, to June 21, 1986). The EEC has also applied for interim protection for its members.

The United Kingdom and Australia have applied for more permanent protection through a Presidential proclamation. No such proclamations have been issued.

CONCLUSION

The act involves dramatic changes in the protection relating to semiconductor chips and products embodying them. Companies should carefully review their methods of doing business to determine the effect of the act. Appropriate action will depend on a company's role in the semiconductor industry and/or use of semiconductor chips (or products incorporating them). The interests of chip designers will be very different from those of distributors and importers of semiconductor chips. However, some general suggestions can be made:

1. Companies should review as soon as possible any agreements or understandings relating to semiconductor chips in whose designs it believes it has an ownership interest.
2. Companies should establish a program to take advantage of the rights established by registration.
3. Companies should establish a system to ensure that they register all mask works within the required two year time period.
4. Companies should incorporate into their present proprietary rights program including the affixation of mask work notices on appropriate items. Companies should consider when to apply multiple notices such as trade secret rights and copyright notices.
5. Companies should review their present agreements to make sure that they reflect the changes in the manner in which the act allocates rights.
6. Companies involved in the manufacture, importation or distribution of semiconductor chips (or the distribution or importation of products incorporating such semiconductor chips), should ensure that their agreements provide them with adequate protection against liability for contributory infringement under the act.
7. If a company is involved in semiconductor chip design and it reverse engineers semiconductor chips, it should consult with legal counsel in order to review its present procedures and modify them as is necessary to come within the reverse engineering provisions of the act.